Abstract

Breast cancer is one of the most common cancers among women of the developing countries in the world, and it has also become a major cause of death [1, 2]. Treatment of breast cancer is
ANN based Classifier System for Digital Mammographic Images

effective only if it is detected at an early stage. X-ray Mammography is the most effective
 technique used by radiologists in the screening and diagnosis of breast cancer in women but
the mammographic images are complex [2]. With the development in Artificial Intelligence (AI)
and Soft Computing Techniques, Computer-Aided Diagnosis (CAD) attracts more and more
attention for brain tumor diagnosis. Computer-Aided Diagnosis system (CAD) can be very
helpful in detecting and diagnosing breast abnormalities earlier and faster than typical screening
programs. This paper presents retrieval and ANN (Artificial neural network) based classification
system for computer aided diagnosis of breast cancer using texture features. The proposed
system uses Euclidean distance for the comparison of the feature vector of the query image and
each image in the database. It has been found that the proposed CBIR system is gives 80%
retrieval accuracy for the database of 200 images of mini-MIAS database. Further the ANN
based classifier gives 94% accuracy in classifying benign and malignant breast masses.
MATLAB ® 7.01 image processing toolbox and ANN toolbox have been used to implement the
algorithm. The results show that texture features can be effectively used for classifying
mammographic images with high level of accuracy.

References

- J. Ferlay, F. Bray, P. Pisani and D.M. Parkin. GLOBCAN 2000: Cancer Incidence,
  Mortality and Prevalence Worldwide. Version 1.0. IARC Cancer Base No. 5. Lyon, IARC Press,
- Hala Al-Shamlan, Ali El-Zaart,” Feature Extraction Values for Breast Cancer
  Mammography Images”, proceedings of International conference on Bioinformatics and
- B.K.Singh,” Mammographic Image Enhancement, Classification and Retrieval Using
  (1985).
  Cancer Society, 2003
- K.Rajakumar, Dr.S.Muttan ,”Medical Image Retrieval using Energy Efficient Wavelet
  Transform”, Second International conference on Computing, Communication and Networking
  Technologies, Chennai,India (2010).
- Y. Liu, D.S. Zhang, G. Lu and W.-Y. Ma, “Region-based image retrieval with perceptual
  931–938.
  and segmentation approach to automatic image annotation,” International Conference on Image
  and Video Retrieval (CIVR), 2004, pp. 545–554.
- V. Mezaris, I. Kompatsiaris and M.G. Strintzis, “ontology approach to object-based image
- Y. Ireneaus Anna Rejani, “ Early Detection of Breast Cancer using SVM Classifier
  Technique”, International Journal of Computer Science and Engineering Vol.1(3), pp. 127-130,
  2009.


Index Terms

Computer Science Pattern Recognition

Keywords

Mammograms image processing
shape and texture features

Content Bases Image Retrieval (CBIR)

ANN (Artificial Neural Network)